STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

In the matter of approving a new	**)**	**Proposed Decision Regarding**
air contaminant source for	**)**	**Order No. 08AQ-C078**
VMware, Inc., Intergate Columbia I Building	**)**	**Second Revision**

To: **Patrick Sullivan**
VMware, Inc.
3401 Hillview Avenue
Palo Alto, CA 94304

VMware Inc. may install and operate up to ten diesel-fired standby generators at their Intergate Columbia I Building. The generators will be used to provide standby electrical power to the Data Center. The Data Center will be used as an electronic data storage facility.

The Data Center is located along Grant Road, outside of East Wenatchee, within the SE ¼ of the SW ¼ of Section 10, Township 22 North, Range 21 East, Willamette Meridian, Douglas County, Washington.

THEREFORE, it is ordered that the project as described in said Notice of Construction application and more specifically detailed in plans, specifications and other information submitted to the Department of Ecology in reference thereto, is approved for construction, installation and operation, provided the following conditions are met:

Approval Conditions

1.0 Original Generators

Legal Authority: The six generators, installed 2008 through 2010, and identified as Pod 2: SG-2A1, SG-2A2, Swing Generator (Reserve), and Pod 3: SG-3A1, SG-3A2, SG-3A3, qualified as a new source of air contaminants under Washington Administrative Code (WAC) 173-400-110, September 6, 2007, and a new source of toxic air pollutants under WAC 173-460-040, July 21, 1998. The emission units were originally permitted under Order No. 08AQ-C078, issued September 19, 2008, and then Order No. 08AQ-C078 First Revision, issued July 9, 2010. This Order supercedes Order No. 08AQ-C078 First Revision; Order No. 08AQ-C078 First Revision is no longer in effect. These emission units were reviewed under the legal authority of Revised Code of Washington (RCW) 70.94.152 and the applicable rules and regulations adopted thereunder.

1.1 Emission Limits

1.1.1 NO_x emissions from each diesel engine exhaust stack shall not exceed 6.13 grams per kilowatt-hour (g/kW-hr).

1.1.2 CO emissions from each diesel engine exhaust stack shall not exceed 3.57 g/kW-hr.

1.1.3 PM emissions from each diesel engine exhaust stack shall not exceed 0.2 g/kW-hr. All PM emissions are considered to be 2.5 microns or less in diameter and diesel engine exhaust particulate (DEEP).

1.1.4 VOC emissions from each diesel engine exhaust stack shall not exceed 0.29 g/kW-hr.

1.1.5 SO_2 emissions from each diesel engine exhaust stack shall not exceed 0.03 lbs/hr.

1.1.6 Visible emissions from each diesel engine exhaust stack shall be no more than 5 percent opacity, with the exception of a ten (10) minute period after unit start-up. Visible emissions shall be measured by using the procedures contained in 40 CFR 60, Appendix A, Method 9.

1.2 Operation

1.2.1 Each generator shall be limited to 72 hours per year of low load prescheduled testing. Testing shall be performed on one generator at a time.

1.2.2 In aggregate, generators shall not exceed 220 hours of full load operation per year. No more than five generators may be operated at any one time.

2.0 Expansion Generators

Legal Authority: The four generators, to be installed after May 2013, and identified as Pod 1: P1-2, P1-3, P1-4 Reserve, and Pod 3: P3-6, qualify as a new source of air contaminants under Washington Administrative Code (WAC) 173-400-110, November 28, 2012, and a new source of toxic air pollutants under WAC 173-460-040, May 20, 2009. These emission units were reviewed under the legal authority of Revised Code of Washington (RCW) 70.94.152 and the applicable rules and regulations adopted thereunder.

2.1 Emission Limits

2.1.1 NO_x emissions from each diesel engine exhaust stack shall not exceed 6.52 g/kW-hr at 60% load and 9.24 g/kW-hr at 100% load.

2.1.2 CO emissions from each diesel engine exhaust stack shall not exceed 1.08 g/kW-hr at 60% load and 0.725 g/kW-hr at 100% load.

2.1.3 PM emissions from each diesel engine exhaust stack shall not exceed 0.201 g/kW-hr at 60% load and 0.200 g/kW-hr at 100% load. All PM emissions are considered to be 2.5 microns or less in diameter and diesel engine exhaust (DEEP).

2.1.4 VOC emissions from each diesel engine exhaust stack shall not exceed 0.282 g/kW-hr.

2.1.5 SO_2 emissions from each diesel engine exhaust stack shall not exceed 0.03 lbs/hr.

2.1.6 Visible emissions from each diesel engine exhaust stack shall be no more than 5 percent opacity, with the exception of a ten (10) minute period after unit start-up. Visible

emissions shall be measured by using the procedures contained in 40 CFR 60, Appendix A, Method 9.

2.2 Operation

2.2.1 Monthly and corrective testing shall be performed on one generator at a time. Each generator shall be limited to 12 hours per year of low load (i.e., approximately 60% load) monthly reliability and maintenance testing. If monthly testing indicates a problem, up to 12 hours per year per generator of full load corrective testing may occur.

2.2.2 In aggregate, generators shall not exceed 156 hours of full load operation per year, on a three year rolling average . (Note: This operation is anticipated to include unplanned power outages and electrical bypass for full-building switchgear and transformer maintenance). No more than three generators may be operated at any one time.

2.2.3 Generator operation for start-up commissioning shall not exceed 24 hours of full load operation per engine. Such operation will occur one time per engine, before it is released by the supplier for use at the data center. Start-up commissioning shall be limited to three engines in any one calendar year.

2.2.4 Generator operation for stack testing may be allowed for testing under condition 5.2. Such operation must be proposed in writing by the permittee and approved in writing by Ecology prior to commencing testing. Such operation shall not exceed 24 hours of runtime per generator, at an average load of 60 percent.

3.0 Equipment – all generators

3.1 This project is limited to the installation of ten (10) - 2,000-kilowatt, electric (kWe) diesel-powered generator-engine sets. (Note: This includes eight active generators and two reserve generators.) A generator-engine set consists of one generator and one engine. Herein, the terms engine and generator may be interchangeable.

3.2 No more than eight generators shall be operated at any one time. Total power production shall not exceed 16,000 kWe.

3.3 All engines shall be certified to 40 CFR 89 Tier 2 standards for non-road engines.

3.4 Replacement of failed engines with like engines (same manufacturer and model family; Cummins 2000-DQKAB; Katolight SD150-J6T3) or equivalent engines requires notification prior to installation.

3.5 Modifications that change emission rates from this project, including replacement engines with different emission rates may require a Notice of Construction application.

3.6 Engines are subject to and shall comply with Title 40 Part 60 Code of Federal Regulations (CFR) Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines.

3.7 Each generator shall be equipped with a properly installed and maintained non-resettable hour meter.

3.8 Each exhaust stack height shall be at least 44 feet above ground level and 15 feet about the parapet wall of the main building roof and located outside the building roofline along the western building wall. The inner diameter of each exhaust stack shall not exceed 16 inches.

4.0 Operation – all generators

4.1 Total fuel consumption shall be limited to 121,843 gallons per year of No. 2 distillate fuel oil with sulfur content of 0.0015 weight percent or less. Herein, "year" refers to any consecutive 12-month period.

4.2 Under no circumstances shall the generators be utilized to satisfy a financial arrangement with any entity (e.g. curtailment rate structures, load shedding, distributed power generation), or to provide electrical power to any other electric power provider or user.

5.0 Emission Testing – all generators

5.1 Permittee will follow Cummins recommended diagnostic testing and maintenance procedures to ensure that each individual engine will conform to 40 CFR 89 emission specifications throughout the life of each engine.

5.2 At the conclusion of the manufacturer's warranty term (60 months from engine delivery date or 3,000 hours of operation), permittee shall pursue one of the following options:

5.2.1 Emission testing of each engine for NO_X and PM emission rates to determine continuing compliance with the 40 CFR 89 emission standards. The testing shall be repeated every 60 months thereafter.
5.2.2 Re-evaluate BACT and T-BACT and health risk of the project's operations.
5.2.3 Satisfy the equipment manufacturer's requirements to renew or extend the emissions control equipment warranty.
5.2.4 Any combination of the above three options.

6.0 Operation and Maintenance – all generators

6.1 The emission units shall be properly operated and maintained. An emission unit specific operating and maintenance (O&M) manual shall be developed and followed. Manufacturers' operating instructions and design specifications for the engines, generators and associated equipment shall be included in the manual. The O&M manual shall be updated to reflect any modifications of the equipment or its operating procedures. Emissions that result from failure to follow the operating procedures contained in the O&M manual or manufacturer's operating instructions may be considered proof that the equipment was not properly installed, operated, and/or maintained. The O&M manual for the diesel electric generation units and associated equipment shall at a minimum include:

6.1.1 Testing and maintenance procedures that will ensure that each individual engine will conform to 40 CFR 89 specifications throughout the life of the engine.
6.1.2 Normal operating parameters and design specifications.
6.1.3 Operating maintenance schedule.
6.1.4 Actions for abnormal operation.

6.2 In accordance with WAC 173-400-101, the O&M manual shall be reviewed and updated by the source owner or operator at least annually. O&M records shall be available for inspection by Ecology, organized in a readily accessible manner, and retained for at least five (5) years.

6.3 If visual inspection, public complaints, or other information indicates that excessive emissions are occurring, the permittee shall take immediate steps to bring the affected emission unit(s) into compliance with the limitations contained in this Order.

6.4 It shall not be a defense for the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this Order.

7.0 Recordkeeping and Reporting – all generators

All records, Operations and Maintenance Manual, and procedures developed under this Order shall be organized in a readily accessible manner and cover a minimum of the most recent 60-month period. The following records are required to be collected and maintained:

7.1 Fuel receipts with amount of diesel and sulfur content for each delivery.

7.2 Log of hours and associated purpose and load of operation, for each engine.

7.3 Upset condition log for each engine and generator that includes date, time, duration of upset, cause, and corrective action.

8.0 General Conditions

8.1 **Commencing Construction** - As of May 2013, six generators had been installed. Additional generator installation must commence no later than November 2014. Approval to install additional generators shall become invalid if construction is not commenced by November 2014, if construction is discontinued for a period of 18 months or more, or if construction is not complete within a reasonable time. Ecology may extend the 18-month period upon a satisfactory showing that an extension is justified.

8.2 **Discontinuing Operations** - It shall be grounds for rescission of this approval if physical operation is discontinued for a period of eighteen (18) months or more. Ecology may extend the 18-month period upon a satisfactory showing that an extension is justified.

8.3 **Compliance Assurance Access** - Access to the source by EPA or Ecology shall be allowed for the purposes of compliance assurance inspections. Failure to allow access is grounds for revocation of the Order approving the NOC.

8.4 **Availability of Order & Manual** - Legible copies of the Order approving the NOC application and the O&M Manual shall be available to employees in direct operation of the generators and be available for review upon request by Ecology.

8.5 **Equipment Operation** - Operation of the facility shall be conducted in compliance with all data and specifications submitted as part of the NOC application and in accordance with the O&M manual, unless otherwise approved in writing by Ecology. Emissions that result from failure to follow the requirements of the O&M manual or manufacturer's instructions may be considered proof that the equipment was not properly operated, maintained and tested.

8.6 **Activities Inconsistent with this Order** - Any activity undertaken by the permittee or others, in a manner that is inconsistent with the NOC application and this determination, shall be subject to Ecology enforcement under applicable regulations.

8.7 **Obligations under Other Laws or Regulations** - Nothing in this Order shall be construed to relieve the permittee of its obligations under any local, state or federal laws or regulations.

8.8 **Registration** – Periodic emissions inventory and other information may be requested by Ecology. Information will be submitted within 30 days of receiving the request, unless otherwise specified. All fees will be paid by the date specified.

Authorization may be modified, suspended or revoked in whole or part for cause, including, but not limited to, the following:

I. Violation of any terms or conditions of this authorization;
II. Obtaining this authorization by misrepresentation or failure to disclose fully all relevant facts.

The provisions of this authorization are severable and, if any provision of this authorization or application of any provision to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this authorization, shall not be affected thereby.

YOUR RIGHT TO APPEAL

You have a right to appeal this Coverage Order to the Pollution Control Hearing Board (PCHB) within 30 days of the date of receipt of this approval order. The appeal process is governed by Chapter 43.21B RCW and Chapter 371-08 WAC. "Date of receipt" is defined in RCW 43.21B.001(2).

To appeal you must do the following within 30 days of the date of receipt of this Coverage Order:

- File your appeal and a copy of this Coverage Order with the PCHB (see addresses below). Filing means actual receipt by the PCHB during regular business hours.

- Serve a copy of your appeal and this Coverage Order on Ecology in paper form - by mail or in person. (See addresses below.) E-mail is not accepted.

You must also comply with other applicable requirements in Chapter 43.21B RCW and Chapter 371-08 WAC.

ADDRESS AND LOCATION INFORMATION

Street Addresses	Mailing Addresses
Department of Ecology Attn: Appeals Processing Desk 300 Desmond Drive SE Lacey, WA 98503 **Pollution Control Hearings Board** 1111 Israel Road SW Suite 301 Tumwater, WA 98501	**Department of Ecology** Attn: Appeals Processing Desk PO Box 47608 Olympia, WA 98504-7608 **Pollution Control Hearings Board** PO Box 40903 Olympia, WA 98504-0903

DATED at Yakima, Washington, this [day] Day of [month], 2013.

Reviewed by:

PROPOSED DECISION
Lynnette A. Haller, PE
Air Quality Program
State of Washington
Department of Ecology

Approved by:

PROPOSED DECISION
Susan M. Billings
Section Manager
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